



Annual Progress Report
on the
Corrective Action Program
in Washington State

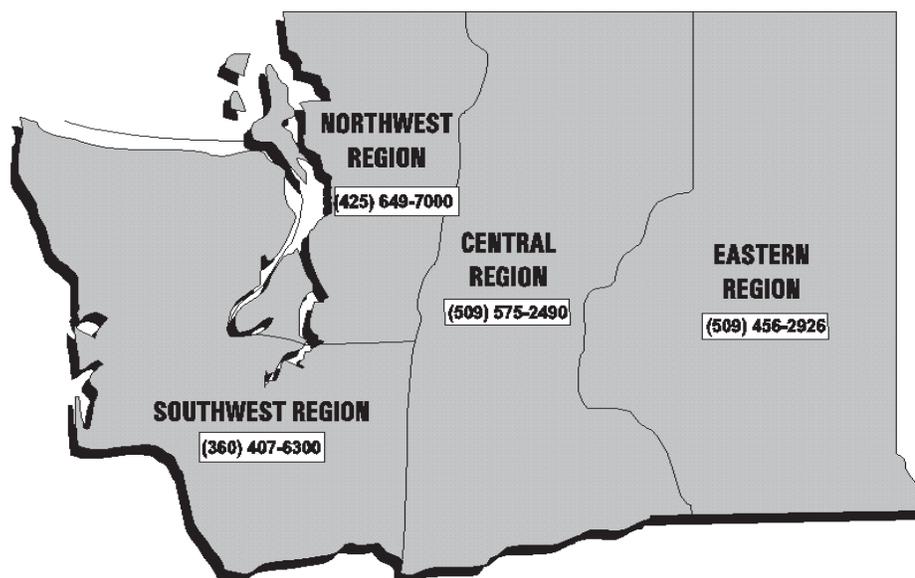
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Executive Summary

Corrective action is the environmental cleanup program for dangerous waste treatment, storage and disposal facilities (TSDFs). It is a federal program, and the Environmental Protection Agency (EPA) delegated implementation of the program to the Washington State Department of Ecology (Ecology). Ecology uses the state “Superfund” law, the Model Toxics Control Act (MTCA), cleanup procedures and requirements to implement corrective action. Therefore, cleanup at TSDFs under corrective action is consistent with that at other sites requiring cleanup, statewide.

There are 116 known corrective action sites in the state. Unfortunately, Ecology does not have the resources to work on all corrective action sites right now. EPA and Ecology have worked together to identify and prioritize the sites that need attention first. These are the sites that represent a greater threat due to human exposure and/or ongoing contamination of groundwater. Based on those criteria, there are 27 “high priority” sites in this State, and the agencies are working to require cleanup at all of them. Ecology is managing 19 of the “high priority sites”, and EPA is managing the other eight sites. Ecology is also working on 16 “medium priority” sites.

By 2005, the agencies have committed to the following Environmental Indicator (EI) corrective action goals:

- Control direct human exposure to contaminants at 95% of the “high priority” sites.
- Control releases of contaminants to groundwater at 70% of the “high priority” sites.

These 2005 EI goals reflect interim steps to reduce immediate impacts to human health and the environment. However, the long-term goal of cleaning up such sites completely will take additional effort and time, as discussed below.

The current status at 27 Washington high priority sites is as follows:

- Human exposure controlled: 37%
- Releases to groundwater controlled: 19%

EPA and Ecology are focused on the EI goals and will make significant progress requiring cleanup of the most seriously contaminated sites. There is much work and progress needed to achieve the goals. At this time, it is not certain that the EI goals will be reached by 2005.

Ecology has developed a separate performance measure to assess corrective action progress at TSDFs from beginning to end. It accounts for incremental and ongoing progress being made at the sites. Based on that measure, the following information is provided:

- Overall, the 19 “high priority” sites Ecology is managing are 52% completed with the corrective action process.
- Ecology expects corrective action to be completed at these 19 “high priority” sites by 2011.
- Overall, the Ecology 16 “medium priority” sites are 38% completed with the corrective action process.
- Ecology expects corrective action to be completed at the 16 “medium priority” sites by 2032.

Ecology will use this measure to assess ongoing corrective action progress, to discuss progress with interested persons, and to aid in workload planning.

Introduction

The purpose of this report is to provide a brief summary of corrective action at Resource Conservation and Recovery Act (RCRA) treatment, storage and disposal facilities (TSDFs) in Washington. It includes a general description of the corrective action environmental cleanup process, including the authority to require cleanup and the various phases of the cleanup process. It also describes how Ecology and EPA work together to conduct corrective action in Washington through various state and federal environmental programs.

The report presents information on the TSDFs that require corrective action in the state, including:

- Total number of known sites;
- Breakdown of work status on the sites (i.e., no further action needed, cleanup in progress, cleanup pending, referred to other authority);
- Priority assigned to the various sites (i.e., high, medium, low), and how that priority was established;
- Discussion of goals and current progress to control direct human exposure and release to groundwater at high priority sites by 2005;
- Discussion of an innovative performance measure developed by Ecology to assess overall progress in completing cleanup at corrective action sites, and the current status at cleanup sites using that measure;
- Estimates of when corrective action will be completed at high and medium priority corrective action sites in the State.

The report is structured around a set of basic questions about the corrective action program and sites in Washington. There is a very brief and direct response immediately below each question. Then, there is a more complete response to the question in the column to the right of the question. That response includes detailed information and data to answer the question. Finally, there are several appendices that provide more detailed information about the sites, status of the high and medium priority sites in the corrective action process, and the performance measure that Ecology developed.

Questions and Answers

A. What is “corrective action?”

Corrective action is an environmental contamination cleanup program for dangerous waste treatment, storage and disposal facilities (TSDFs).

“Corrective action” is an environmental contamination cleanup program for former and current dangerous waste treatment, storage and disposal facilities (TSDFs) that are regulated by the Federal Resource Conservation and Recovery Act (RCRA).

Work under “corrective action” is similar to the environmental cleanup work conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as the Federal “Superfund” law and the Washington State Model Toxics Control Act (MTCA). The Federal Superfund and the Washington State MTCA program foster the cleanup of a broad range of contaminated sites resulting from manufacturing, energy production, commercial activity, transportation, military and governmental functions. “Corrective action” addresses a much smaller array of sites, but it has very similar environmental goals. Corrective action is directed at RCRA TSDFs that require environmental cleanup. Cleaning up environmental contamination at TSDFs is one of the highest environmental priorities of the EPA and Ecology.

TSDFs are regulated by RCRA, and are relatively few in number -- yet many have a legacy of spills, mismanagement and non-compliance. Many of these TSDFs have closed or are in the process of closing their facilities. Cleaning up contaminated soil, surface water and groundwater at any site is often difficult, complex and protracted because the extent of the problem must first be assessed and investigated before the actual implementation of cleanup occurs. Corrective action is further complicated by the number of parties potentially responsible for creating the contamination and the number of public resource and regulatory agencies involved in the cleanup.

Questions and Answers

B. What are the stages in the “corrective action” process?

1. RCRA Facility Assessment, or RFA
2. RCRA Facility Investigation, or RFI
3. Corrective Measures Study, or CMS
4. Corrective Measures Implementation, or CMI

Proper corrective action requires a thorough understanding of the nature of the contamination and who is responsible. Corrective action includes a sequence of stages that every site goes through. It typically takes a number of years from the beginning to the end of this process.

The four sequential stages in the corrective action process are as follows:

1. RCRA Facility Assessment (RFA) — This is an initial investigation of releases and potential releases at a facility. It involves an extensive file review of the history of the facility, plus a facility inspection. This results in a report that discusses known and potential contamination at the facility, and that recommends additional investigation and/or other corrective action that may be needed.
2. RCRA Facility Investigation (RFI) — This is a detailed facility-wide investigation and characterization of known and potential contamination. It usually involves soil and groundwater investigations, and often involves analyses (e.g., modeling) to evaluate the movement of, and risks associated with, the contamination. During the RFI, sufficient information must be developed on site contamination to determine the cleanup actions, including cleanup levels.
3. Corrective Measures Study (CMS) — This is a study of potential approaches to address contamination at the facility. Several cleanup options are described and evaluated. The study recommends an approach to accomplish the cleanup.
4. Corrective Measures Implementation (CMI)¹ — This is the stage of the corrective action process during which the comprehensive cleanup and/or containment of contamination actually occurs.

¹ Interim corrective measures can be implemented at any stage during the corrective action process. Interim measures are used to address obvious or particularly dangerous contamination problems. In fact, meeting the 2005 “environmental indicator” goals will require early implementation of interim corrective measures at certain sites.

Questions and Answers

C. What regulatory authorities does Ecology use to conduct “corrective action,” and what is EPA’s role?

The overall regulatory authority for cleanup at these sites is RCRA. However, Ecology uses the procedures and standards in MTCA to conduct corrective action. EPA oversees Ecology work on RCRA corrective action. EPA also manages some of the corrective action sites in Washington.

The RCRA law requires TSDF owners and operators to remediate environmental contamination at their facilities, and that is the basic authority Ecology and EPA uses.

From 1984 to 1994, EPA carried out the provisions of RCRA that deal with corrective action at TSDFs. In 1994, EPA accepted Ecology’s application to conduct corrective action work authorized by RCRA. Therefore, like many other federal environmental programs, much of the corrective action work has been delegated to Ecology along with some federal funding. Also, under the terms of the EPA/State performance partnership agreement, some corrective action sites remain under the control of EPA until they are transitioned to the state.

Ecology uses the procedures and standards in MTCA to conduct corrective action. In 1988, the citizens of Washington State passed MTCA as a statewide ballot initiative. It established the amount and type of cleanup Washington’s citizens have asked their government to ensure at all contaminated sites.

In 1994, EPA conducted a thorough legal and technical review of MTCA and confirmed that MTCA cleanups provide environmental results that are equivalent to the results achieved by EPA’s corrective action program. That is how Ecology became qualified to conduct corrective action work authorized by RCRA. A similar review confirmed that MTCA cleanups achieve environmental results that are equivalent to the environmental results achieved by the Federal Superfund program.

With MTCA, the State of Washington has a very thorough and well-established environmental cleanup authority and program. It is very important to Ecology that cleanup at RCRA sites be consistent with procedures and requirements in MTCA. Ecology also enforces regulatory provisions in RCRA that are essential for adequate cleanups at corrective action sites (e.g., land disposal restrictions).

Under MTCA, Ecology can recover the costs of staff time used to manage corrective action sites from TSDF owners. Ecology would have no such cost recovery authority through RCRA. Ecology is striving to minimize administrative burdens under RCRA at corrective action sites so the cleanups can proceed quicker. For example, Ecology wishes to be able to use MTCA cleanup orders instead of RCRA permits at some corrective action sites. Ecology is working with EPA to improve

Questions and Answers

the efficiency and effectiveness of corrective action cleanups in Washington. Therefore, the two major advantages of using MTCA are (1) the ability to recover Ecology’s management costs, and (2) quicker cleanups that are consistent with other environmental remediation done in Washington.

D. How many sites (regardless of priority) in Washington require “corrective action?”

There are 116 identified corrective action facilities in Washington.

Currently, there are 116 known, identified corrective action facilities in Washington. These are classified according to risk as high, medium, and low.

Some of the known facilities are large. Some have multiple contaminated areas that need to be managed separately. In effect, some large and complex facilities need to be managed as multiple sites. Others are small, isolated sites that represent a modest or minor risk to human health and the environment in their present condition.

There are probably more sites that will require corrective action in Washington. New facilities, and new areas of known facilities, are very likely to be discovered through ongoing environmental investigations.

Ecology and EPA are not working on all 116 known sites right now. Figure 1 provides a summary of the status of the sites. Table 1 in Appendix A has more detailed information on the sites.

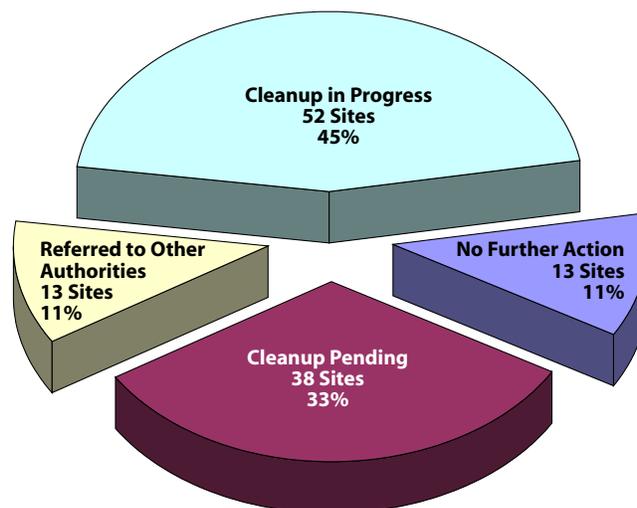


Figure 1— Progress in Corrective Action for all Facilities in Washington State

Questions and Answers

E. How do the agencies determine which “corrective action” sites to work on first?

The agencies rank the sites with the greatest risk to human health and the environment, and work on those first.

In general, the agencies work on “corrective action” sites that represent the greatest risk to human health and the environment first.

In 1997, EPA classified corrective action sites nationwide into three risk categories; high, medium, and low. EPA placed the highest priority on facilities that represent the greatest threats of direct exposure to people and/or ongoing contamination of groundwater. Both Ecology and EPA are using EPA’s classification to help decide which sites to work on first in Washington.

Other, secondary factors, also influence which sites that Ecology works on. For example, if the owner of the TSDf is prepared to begin addressing corrective action needed at their site, Ecology tries to assign a project manager to that site.

Unfortunately, the agencies do not have sufficient staff to work at once on all sites that will ultimately require corrective action.

F. What is the total number of high priority “corrective action” sites Ecology and EPA are working on to ensure cleanup?

Of 27 high priority sites, EPA is working on eight sites and Ecology is working on 19 sites.

EPA and Ecology are currently working on 27 high priority corrective action facilities. Ecology is managing 19 of these sites and EPA is managing eight sites. Both agencies are putting less effort into 16 medium priority sites, until most of the 27 high priority sites are well along in the cleanup process. Thirty-seven low priority sites are classed as “cleanup pending” and will be managed more actively as the medium priority sites finish the cleanup process. (*See Appendix A, Table 1*)

Questions and Answers

G. Does Ecology and the EPA have specific goals for addressing immediate threats at high priority corrective action sites?

Yes. By 2005, the agencies have two goals to meet for “high priority” sites:

- Control direct human exposure to contaminants at 95% of these sites.
- Control releases of contaminants to groundwater at 70% of these sites.

Nationwide, EPA has committed to the following progress at high priority corrective action sites:

- Control direct human exposure to contaminants at 95% of “high priority” sites by 2005.
- Control releases of contaminants to groundwater at 70% of “high priority” sites by 2005.

Ecology is working with EPA to meet these commitments in Washington.

EPA’s commitments are in response to the Government Productivity and Results Act (GPRA) of 1993. That Act holds federal agencies accountable for achieving results, quality, and customer satisfaction. It requires federal agencies to set goals, measure performance, and report publicly on their progress.²

The agencies are using “control of direct human exposure” and “control of releases of contaminants to groundwater” as “environmental indicators” (EIs) of corrective action progress at the 27 “high priority” sites. These EIs focus on whether steps have been taken to address direct human exposures to toxics, such as ingestion, inhalation and touch, and whether controls are in place to prevent the further spread of contaminated groundwater plumes.

H. Are the agencies on track to meet the 2005 EPA “environmental indicator” goals on “corrective action” sites?

Ecology and EPA are committing a large effort to achieving the goals. However, meeting the goals is not certain.

The current status is:

- Human exposure has been controlled at 37% of “high priority” sites.
- Releases to groundwater have been controlled at 19% of “high priority” sites.

Although meeting the 2005 goals is not certain, the agencies are focused on the goal and are making significant progress requiring cleanup of the most contaminated sites (i.e., the “high priority” sites).

Environmental remediation is a complex, technology-limited and time-consuming effort at some sites. The agencies may not be able to overcome real constraints on cleanup progress before 2005 for some “high priority” sites.

The current status of achieving EI goals in Washington is as follows:

- Control of direct human exposure has been accomplished at 37% of “high priority” sites.
- Control of releases to groundwater has been accomplished at 19% of “high priority” sites.

² See http://www.epa.gov/epahome/issues4_1201.htm

Extensive corrective action work and progress is required over the next couple of years to meet the goals. However, the above numbers do not provide a complete picture of corrective action progress. Whether the EIs are satisfied is a simple “yes” or “no” answer. The EIs do not show the incremental progress being made prior to a “yes” response for a site.

I. Does satisfying the “environmental indicators” mean that the site is finished with “corrective action?”

No. Extensive corrective action may be required even after satisfying these “indicators.”

Meeting the “environmental indicators” does not mean that all corrective action at the facility is over. Meeting the indicators just means that the most serious immediate threats have been addressed.

Although EPA and Ecology try to direct their immediate attention to the most serious threats first, the agencies remain involved in the corrective action process at a facility until all contamination is adequately removed or contained.

J. Are there measures of the progress, other than EIs, being made on “corrective action” sites?

Yes. Ecology has developed a measure to evaluate overall completion at sites for those sites being managed by Ecology.

Ecology believes that corrective action is 52% complete for the 19 “high priority” sites.

While the EI numbers discussed in question G, above, reflect real progress in protecting human health and the environment, they do not measure the incremental progress being made at sites prior to and after satisfying the environmental indicator. Corrective action is often complex and progress requires a sustained effort. The EIs have limitations in showing ongoing progress and those have led Ecology to consider additional performance measures. Examples of EI limitations are:

- EIs are “yes-no” indicators, and interim progress being made at a site may not be shown for months or even years. Managers and staff need to assess yearly progress in achieving major milestones.
- EIs are typically interim measures; they do not reflect the entire corrective action process. Satisfying an EI must not be confused with achieving the ultimate long-term cleanup.
- EIs are evaluated on a facility-wide basis. Some facilities are broken into multiple, management cleanup areas. If the EIs for three out of the four areas of one facility can be met, the overall facility still does not meet the EI. In that case there is no apparent EI progress for the site. The site is judged on having met the EI goal only after the entire site meets the EI goal.

Questions and Answers

- Even after the EI is apparently met, ongoing monitoring and investigations may uncover more unexpected contamination on site. This requires reversing the earlier EIs status. This phenomenon appears as “backsliding” on corrective action progress when viewed through the EI performance measure when, in fact, it is a positive step to identify all threats to human health and the environment.
- Although the EIs make fundamental sense, Ecology has no authority to require facilities to meet the EIs for that sake alone. Ecology does have authority to push for corrective action progress and for addressing significant threats as soon as possible.

To address these limitations in the EIs, Ecology has developed an additional performance measure to more adequately show overall environmental progress at corrective action facilities.

Several features of the new Ecology performance measurement are:

- Rather than just ask if an EI is satisfied for an entire facility, Ecology’s performance measure asks what percentage of each area within each high priority facility for all stages of corrective action has been completed. This gives a collective percent completion number for all 19 high priority sites or any other set of facilities. Each year there should be some visible movement toward 100% completion.³
- Progress in achieving cleanup using the four-step process is weighted to reflect the relative amount of effort needed to accomplish each of the four stages. These weighting values are as follows:
 - RCRA Facility Assessment (RFA) reflects 9% of the effort to complete cleanup.
 - RCRA Facility Investigation (RFI) reflects 43% of the effort to complete cleanup.
 - Control Measure Study (CMS) reflects 16% of the effort to complete cleanup.
 - Control Measure Implementation (CMI) reflects 32% of the effort to complete cleanup.

³Ecology’s performance measure gives partial credit for facilities that are part way through the corrective action process. Another way of viewing Ecology’s performance measure is to imagine that all cleanups proceed at the same pace.

Questions and Answers

As shown in Charts 1 and 2 on the next page, the corrective action process is 52% complete for the “high priority” sites in FY 2001. The year 2000 figure is 47% complete for the “high priority” sites. The numbers show that there has been progress of 5% in the past year toward completing cleanup of all 19 high priority sites. (See Appendix B for a detailed description of Ecology’s performance measure.)

Ecology’s performance measure provides the agencies, the TSDFs and the public constant feedback on how corrective action is progressing. Performance measurement charts will be used to visualize progress at facilities, and the overall percent complete number can be measured and recalculated at any time. Ecology will use the information as a workload tool during program planning exercises to redeploy staff or other resources to areas of critical need. They will also be useful during discussions with EPA to develop the Performance Partnership Agreement between the two agencies.

Questions and Answers

Chart 1 – Performance Measure for State High Priority GPRA Sites *FY'00*
Collective Percentage Complete = 47%

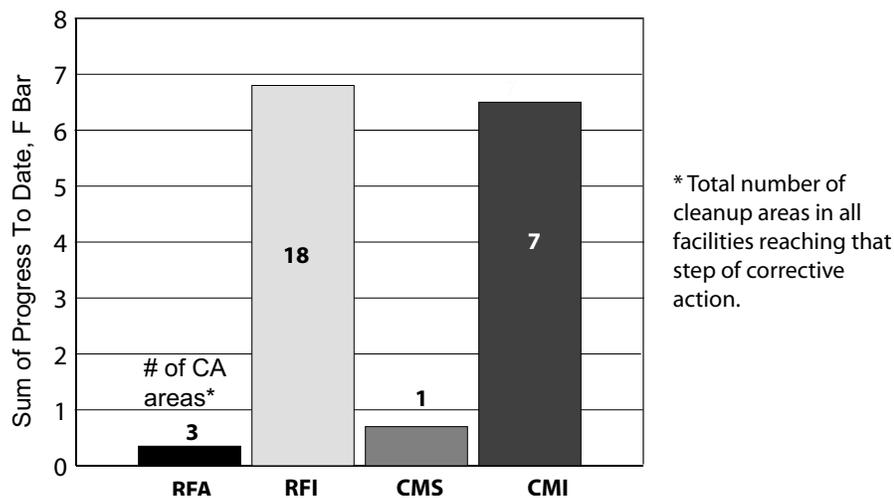
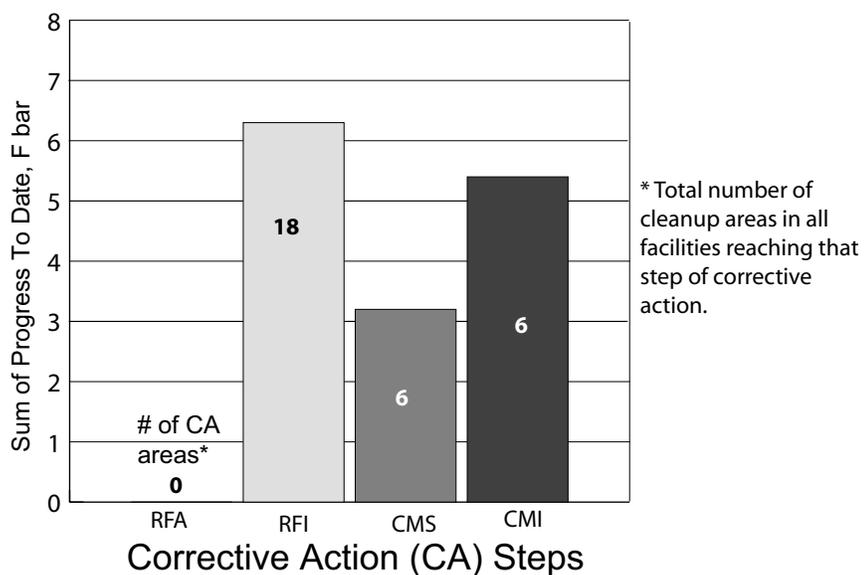


Chart 2 – Performance Measure for State High Priority GPRA Sites *FY'01*
Collective Percentage Complete = 52%



By comparing the two years' progress, the reader can see that all three areas in RCRA Facility Assessment (RFA) have moved on to subsequent stages during FY01. In addition, five areas have entered Control Measure Studies (CMS) — a significant step that should lead to more progress next year.

Questions and Answers

FY '01

K. At what stage in the “corrective action” process are Washington’s high and medium priority facilities in FY ‘01?

The adjacent table provides a summary.

Stage	High Priority Sites	Medium Priority Sites
RFA	0	6
RFI	18	7
CMS	6	0
CMI	6	3
Total	30 ⁴	16

Appendix C provides detailed information on the status of individual facilities.

L. When will “corrective action” be completed for Washington’s facilities?

Ecology expects:

- To complete the current “high priority” sites by 2011.
- To complete the “medium priority” sites by 2032.
- That corrective action will be an ongoing element of the RCRA program in the foreseeable future.

Based on progress over the last year, Ecology expects corrective action work on the 19 “high priority” sites will be completed by the year 2011. Likewise, Ecology expects to complete work on the 16 “medium priority” sites currently being work on by 2032. The rationale for this expectation is given in Appendix D. For at least three reasons, Ecology expects that corrective action will be an ongoing element of the RCRA program in the foreseeable future.

The reasons are:

1. The corrective action process is quite involved and some remedial measures (e.g., bioremediation) require a long time to achieve desired results. Also, some sites will require long-term monitoring (e.g., 30 years or so) under the corrective action program to ensure effective containment of contaminants.
2. Because of limited staff resources, Ecology has not been able to begin corrective action at all facilities where there are known contamination problem. As progress is made at higher priority sites, staff will be assigned to these remaining sites.
3. New contaminated sites are still being identified. Although the number of new known contaminated sites are dramatically fewer than in past years, there still some new facilities being added to the agencies’ work load.

⁴The total high priority sites do not add up to 19 as expected because some of the “sites” have two or more “areas” that are being managed independently.

Appendix A

Table 1. Progress in Corrective Action for all Facilities in Washington State

Priority	Lead Agency	'Cleanups Pending'	Cleanup Pending, Data Source	'Referred to Other Authorities' (ROA)	ROA Data Source	'Cleanups In Progress' (CIP)	CIP Data Source	'No Further Action' (NFA)	NFA Data Sources
High	Ecology				1. CleanCare 2. Cameron	17	Performance Measure Spreadsheet ¹		
	EPA					6	PMS ²	2	1. Van Waters 2. Pendleton
Medium	Ecology			1	American Plating	13		2	1. Georgia Pacific, Resins 2. Vancouver Aerodrome
	EPA			3	1. Georgia Pacific, Bellingham 2. BPA Midway 3. McChord Air Force Base	13	PMS ⁴	2	1. Safety Kleen, Auburn 2. Great Western Chemical
Low		37	EPA Corrective Action Report ⁵						
Other Sites Unclassified		1	Birmingham Steel	7	1. Lidco 2. Pacific Wood Treaters 3. Seattle Steel 4. Fairchild Air Force Base 5. Keyport, US Navy 6. Bremerton, US Navy 7. Wycoff	3	1. Washington Chemical 2. Western Farm Service 3. Siemens Power	7 ⁶	1. Lehigh Portland Cement 2. Queen City Farms 3. Reflex Recycling 4. Port of Shelton 5. Tosco Refining 6. Whidbey Island, USN 7. Port Hadlock WPNSTA
	Totals	38		13		52		13	

¹ CAC Conceptual Drawing 10.x.s.Sheet: State Hi Priority GPRA Sites

² Ibid. Sheet: EPA High GPRA Sites

³ Ibid. Sheet: State Medium GPRA Sites

⁴ Ibid. Sheet: EPA Medium GPRA Sites

⁵ Report Run: January 1, 2001 RCRA Info

⁶ Not Classified

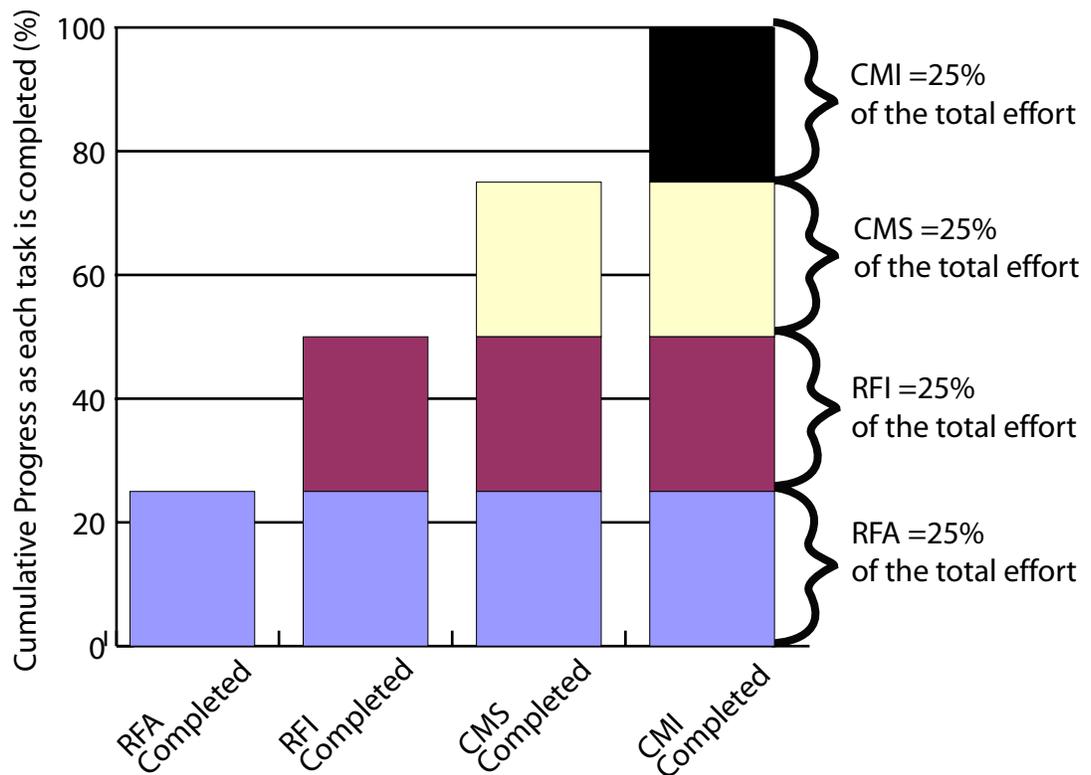
Appendix B

Steps for the Explanation of the Rationale in the Performance Measurement Shown in Appendix C.

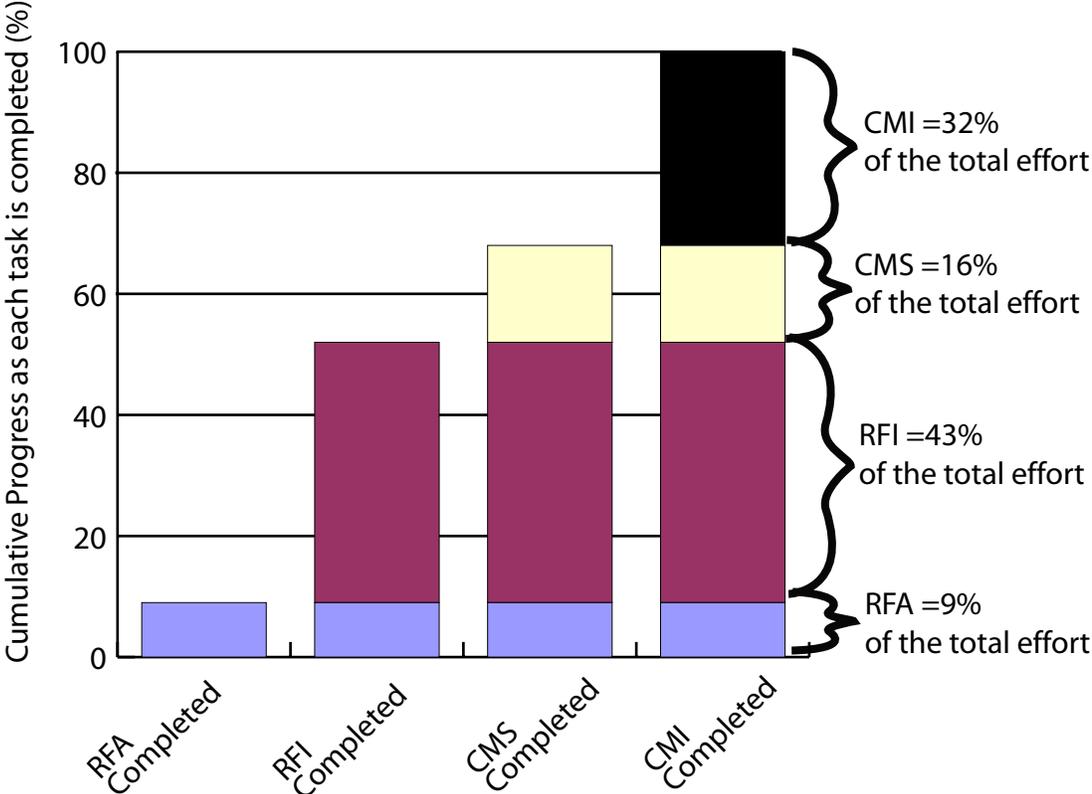
The following few pages explain the reasoning behind the calculation used in this performance measure. The performance measurement is calculated from information on how far along in step wise fashion, each area or facility is in the corrective action process. This calculation starts with reports for individual site managers reporting on site progress in the current corrective action stage (i.e., RFA, RFI, CMS, CMI). The site managers report a fractional completion factor for each area undergoing corrective action, or for the entire facility if it is being managed as one area.

These values are shown in aggregate, not only for all areas in a given facility but for all facilities, in the high priority or medium priority category of cleanup sites. Completion values, reflecting cumulative progress and weighted according to the relative amount of effort of each corrective action stage, are then averaged across all areas and facilities in each category (high or medium) to arrive at one number — a performance measure in the form of an average percentage completion.

Step 1 – Cumulative progress attained at the completion of each step of the Corrective Action Process if each step is considered to entail an equal amount of effort (unweighted).

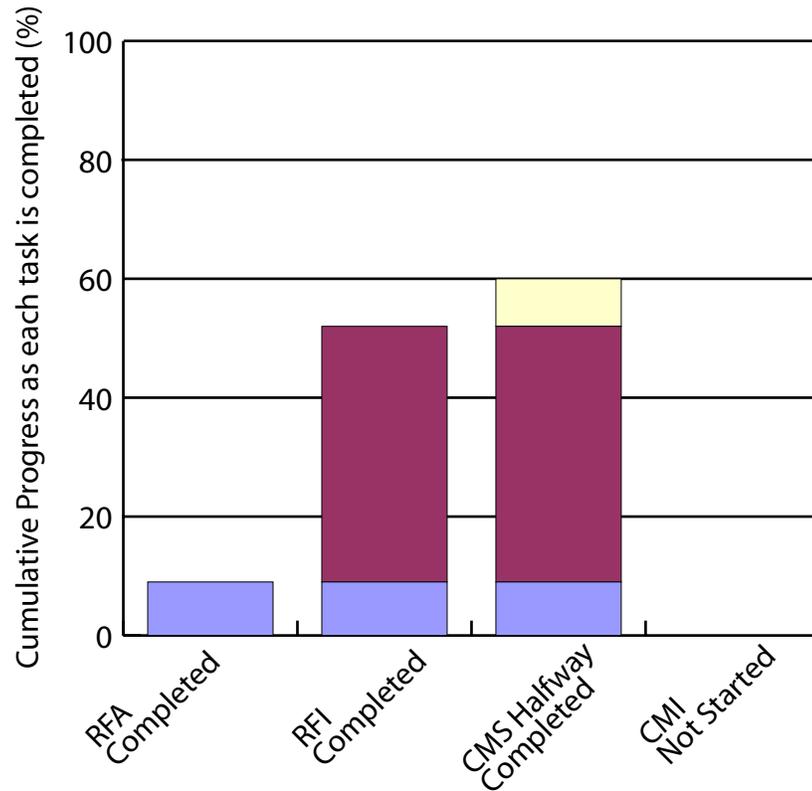


Step 2 – Cumulative progress attained at the completion of each step of the Corrective Action Process if each step is weighted for actual effort entailed (weighted).



Appendix B

Step 3 – Cumulative Progress attained at Facility A which is halfway through CMS (using weighted values).

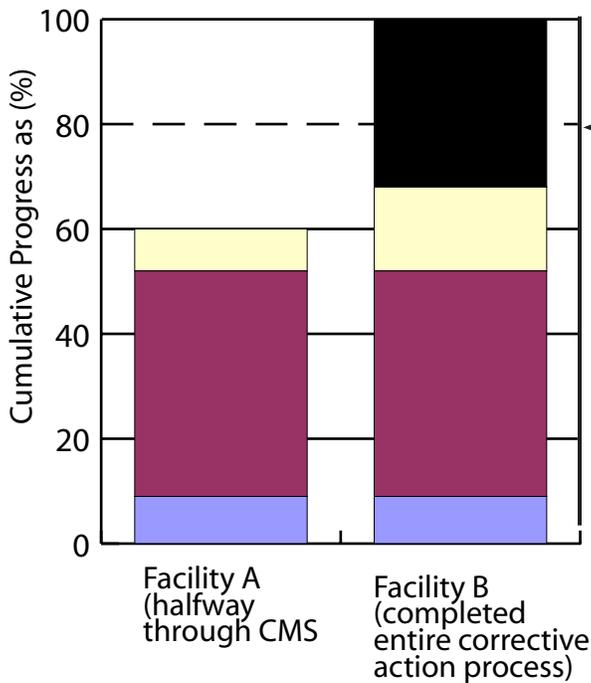


Calculation for Step 3:

0.09 RFA completed
0.43 RFI completed
0.08 CMS halfway completed ($0.5 \times 0.16 = 0.08$)
0.00 CMI not started
 $0.60 \times 100 = 60\%$ completion value

Appendix B

Step 4 – Cumulative Progress of two facilities, using weighted values. Facility A is halfway through the CMS process, Facility B has completed the entire corrective action process.



Average for the two shown facilities.

Ecology's performance measure averages the percent completion value for all facilities in a category (e.g., all high priority facilities). This provides an overall measure of the "percent completion" for that group of facilities.

Calculation for Step 4:

Facility A

0.09 = RFA completed
 0.43 = RFI completed
 0.08 = CMS halfway completed
 0.00 = CMI not started
 0.60 = Cumulative progress (60%)

Facility A = 0.60
 Facility B = 1.00
 1.60

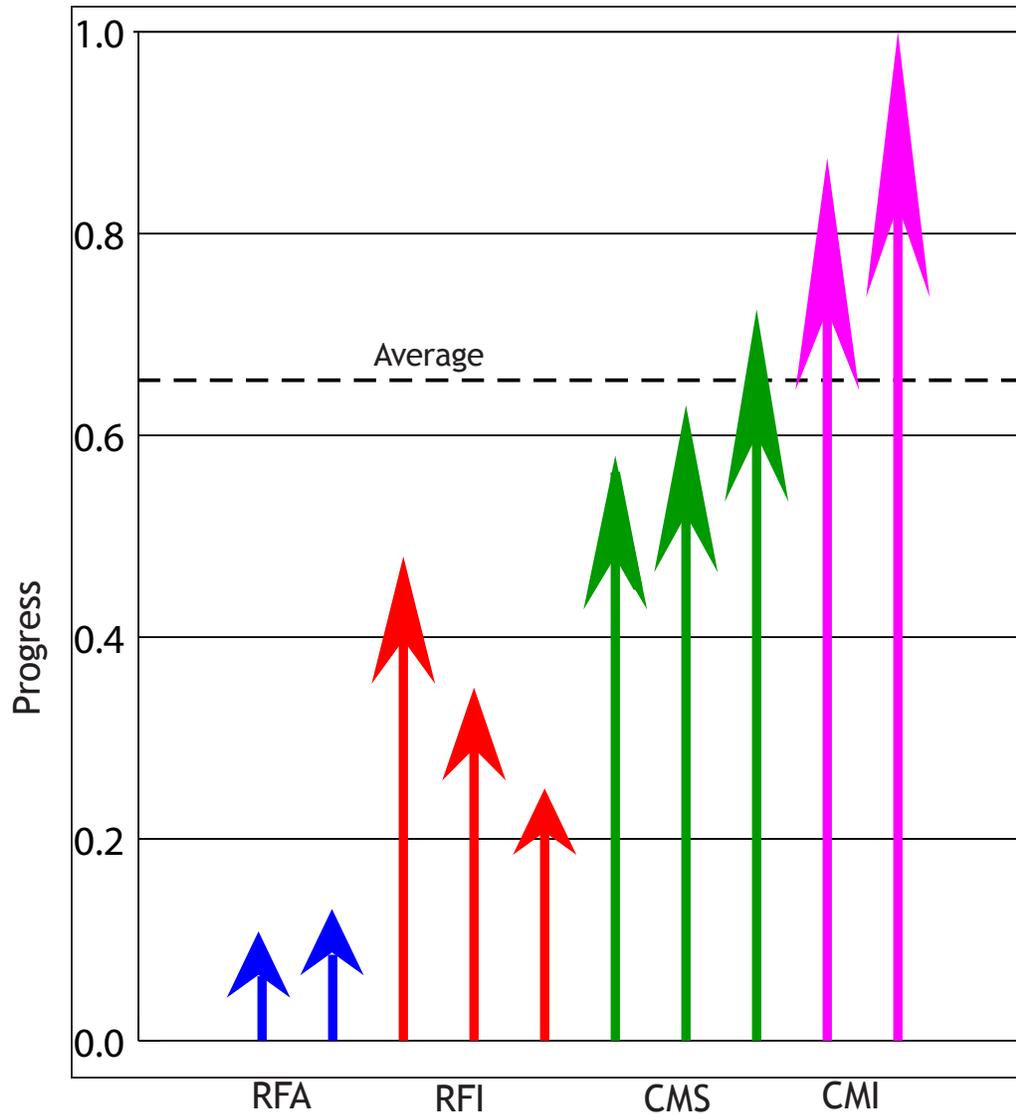
Facility B

0.09 = RFA completed
 0.43 = RFI completed
 0.16 = CMS completed
 0.32 = CMI completed
 1.00 = Cumulative progress (100%)

$1.60 / 2 = 0.8 \times 100 = 80\%$ average completion value for the two facilities

Appendix B

Step 5 – Adding Progress for Many Areas Across Facilities



The above figure is a hypothetical graph of the progress of many different facilities. Each arrow represents a separate facility or area. To calculate Ecology's performance measure, the progress of all of these is averaged. The result indicates how far along on average that group of facilities is in the corrective action process.

Appendix C

Figure 2 – Summary Graph of Performance Measure for State High Priority GPRA Sites (FY 00)

Percent Complete = 47%

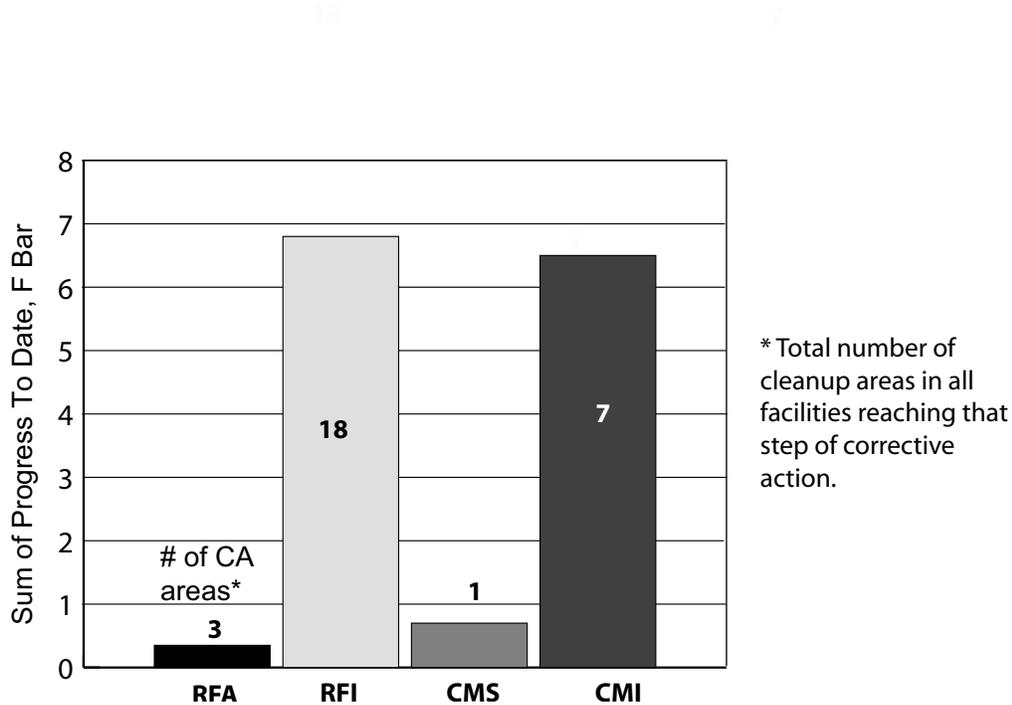


Chart 3 – Summary Graph of Performance Measure for State High Priority GPRA Sites (FY 00)

High Priority GPRA State Facilities (FY 00)

	No. of Sites/Areas	F Bar
RCRA Facility Assessment (RFA)	3	0.27
RCRA Facility Investigation (RFI)	18	6.44
Corrective Measure Study (CMS)	1	0.55
Corrective Measure Implementation (CMI)	7	6.34
Total	29	13.6
Percent Complete	47 %	

Appendix C

Table 2 – Individual Fractional Completion Values

High Priority GPRA State Facilities (FY 00)

Facility Name	Area	Fractional Completed Value	Weighted Fractional Completed Value	Cumulative Fractional Completed Value
RFA (RCRA Facility Assessment) Wt factor=0.09				
Boeing D & SG, Tukwila	Area 1 - Facility	1.00	0.09	
Hanford	Facility	NA	NA	
USARMY - Ft. Lewis	North	1.00	0.09	
USARMY - Ft. Lewis	South	1.00	0.09	
			Sum = 0.27	0.27
RFI (RCRA Facility Investigation) Wt factor=0.43				
TOXGON (Penberthy)	Facility	0.10	0.04	
Boeing Renton	Area 1 -Remainder	0.75	0.32	
Boeing Renton	Area 5	0.75	0.32	
Boeing Renton	Area 6	0.75	0.32	
Boeing Renton	Area 7	0.75	0.32	
Boeing Renton	Area 8	0.75	0.32	
Cascade Pole and Lumber	Facility	0.30	0.13	
Philip (BEI)-Tacoma	Facility	0.50	0.22	
Boeing Everett	Facility	0.50	0.22	
Philip (BEI) Washougal	Facility	0.50	0.22	
General Electric	Facility	0.75	0.32	
BFG Kalama Chemical	East	0.70	0.30	18 areas have
BFG Kalama Chemical	Central	0.70	0.30	completed RFA
BFG Kalama Chemical	North Impacted	0.70	0.30	18 X .09 = 1.62
BFG Kalama Chemical	West Impacted	0.70	0.30	
Philip (BEI) Pier 91	Area 1	0.50	0.22	1.62
Philip (BEI) Pier 91	Area 2	0.50	0.22	4.82
Lilyblad	Area 3 Facility	1.00	0.43	
			Sum= 4.82	Sum= 6.44
CMS (Corrective Measures Study) Wt factor=0.16				
International Paper	Area 3 Maintenance	0.20	0.03	Sum = 0.55
CMI (Corrective Measures Implementation) Wt factor=0.32				
International Paper	Area 1 TWP	0.95	0.30	
International Paper	Area 2 non TWP	1.00	0.32	7 areas have
OCC (Pioneer) Tacoma	Onsite	0.30	0.10	Completed RFA, RFI and CMS
OCC (Pioneer) Tacoma	Offsite	0.30	0.10	7 times (.09+
OCC (Pioneer) Tacoma	Facility	NA		.43 + .16) = 4.76
Equilon (Texaco) Refinery	Area 1	0.90	0.29	
Equilon (Texaco) Refinery	Area 2	0.55	0.18	4.76
Tosco Ferndale Refinery	Area 1 Facility	0.90	0.29	1.58
			Sum= 1.58	Sum = 6.34

Figure 3 – Summary Graph of Performance Measure for State High Priority GPRA Sites (FY 01)

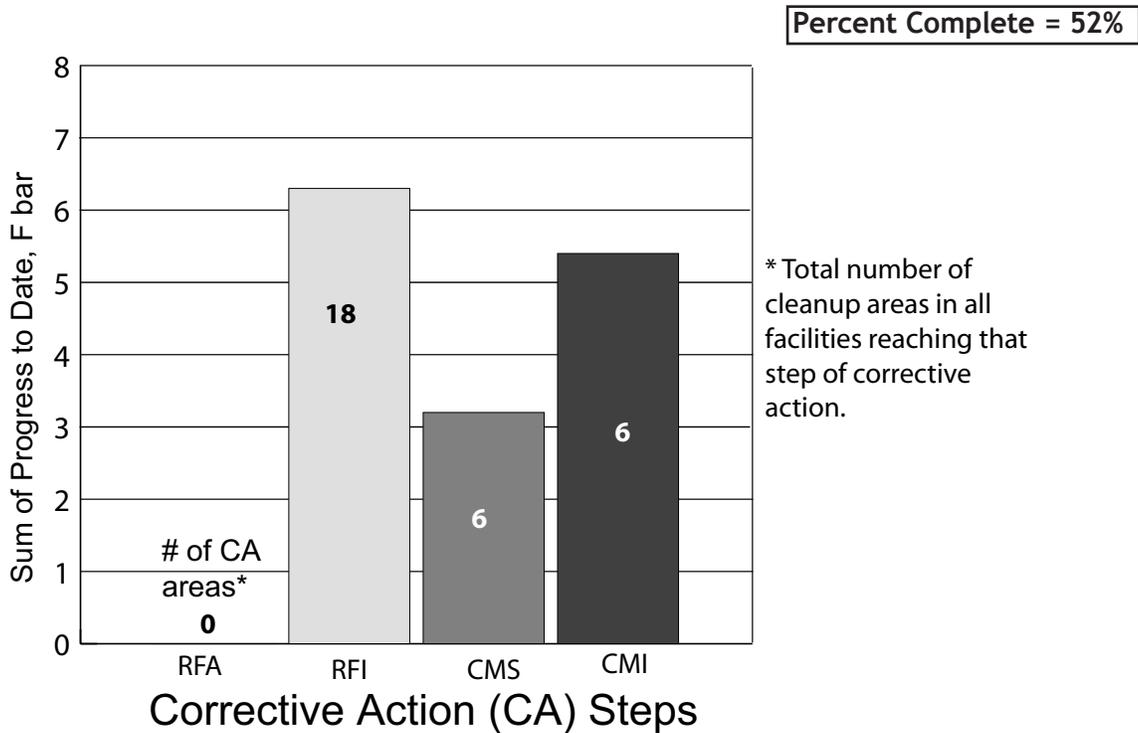


Chart 4 – Summary Graph of Performance Measure for State High Priority GPRA Sites (FY 01)

High Priority GPRA State Facilities (FY 01)

	No. of Facilites/Areas	F Bar
RCRA Facility Assessment (RFA)	0	0.00
RCRA Facility Investigation (RFI)	18	6.46
Corrective Measure Study (CMS)	6	3.59
Corrective Measure Implementation. (CMI)	6	5.60
Total	30	15.65
Percent Complete	52 %	

Appendix C

Table 3 – Individual Fractional Completion Values

High Priority GPRA State Facilities (FY 01)

Facility Name	Area	CA Code	Fractional completion value for the milestone
RFA (RCRA Facility Assessment)			
Hanford		NA	NA
RFI (RCRA Facility Investigation)			
TOXGON (Penberthy)	Facility	CA200	0.75
Boeing D & SG, Tukwila	Area 1 – Facility	CA200	0.50
Boeing Renton	Area 1 –Remainder	CA200	0.90
Boeing Renton	Area 5	CA200	0.90
Boeing Renton	Area 6	CA200	0.90
Boeing Renton	Area 7	CA200	0.90
Boeing Renton	Area 8	CA200	0.90
Cascade Pole and Lumber	Facility	CA150	0.30
USARMY – Ft. Lewis	North	CA100	0.25
USARMY – Ft. Lewis	South	CA100	0.25
Philip (BEI)-Tacoma	Facility	CA200	0.75
Boeing Everett	Facility	CA200	0.90
Philip (BEI) Washougal	Facility	CA200	0.75
General Electric	Facility	CA200	0.80
OCC (Pioneer) Tacoma	Solvent/soil	CA100	0.05
OCC (Pioneer) Tacoma	pH Plume/soil	CA500	0.05
Philip (BEI) Pier 91	Area 1	CA200	0.70
Philip (BEI) Pier 91	Area 2	CA200	0.70
CMS (Corrective Measures Study)			
International Paper	Area 3 Maintenance	CA300	0.50
Noveon Kalama	East	CA270	0.50
Noveon Kalama	Central	CA270	0.50
Noveon Kalama	North Impacted	CA270	0.50
Noveon Kalama	West Impacted	CA270	0.50
Lilyblad	Area 3 Facility	CA200	0.75
CMI (Corrective Measures Implementation)			
International Paper	Area 1 TWP	CA550	0.95
International Paper	Area 2 non TWP	CA550	1.00
OCC (Pioneer) Tacoma	Solvent gw pump	CA550	0.35
Equilon (Texaco) Refinery	Area 1	CA550	0.95
Equilon (Texaco) Refinery	Area 2	CA550	0.60
Tosco Ferndale Refinery	Area 1 Facility	CA550	0.95
OOS (OUT-OF-SYSTEM)			
Cameron Yakima		CA210	NA
CleanCare		CA210	NA
Boeing Renton		CA375	NA
USN PSNS Brem.		CA210	

Appendix C

Figure 4 – Summary Graph of Performance Measure for State Medium Priority GPRA Sites (FY 00)

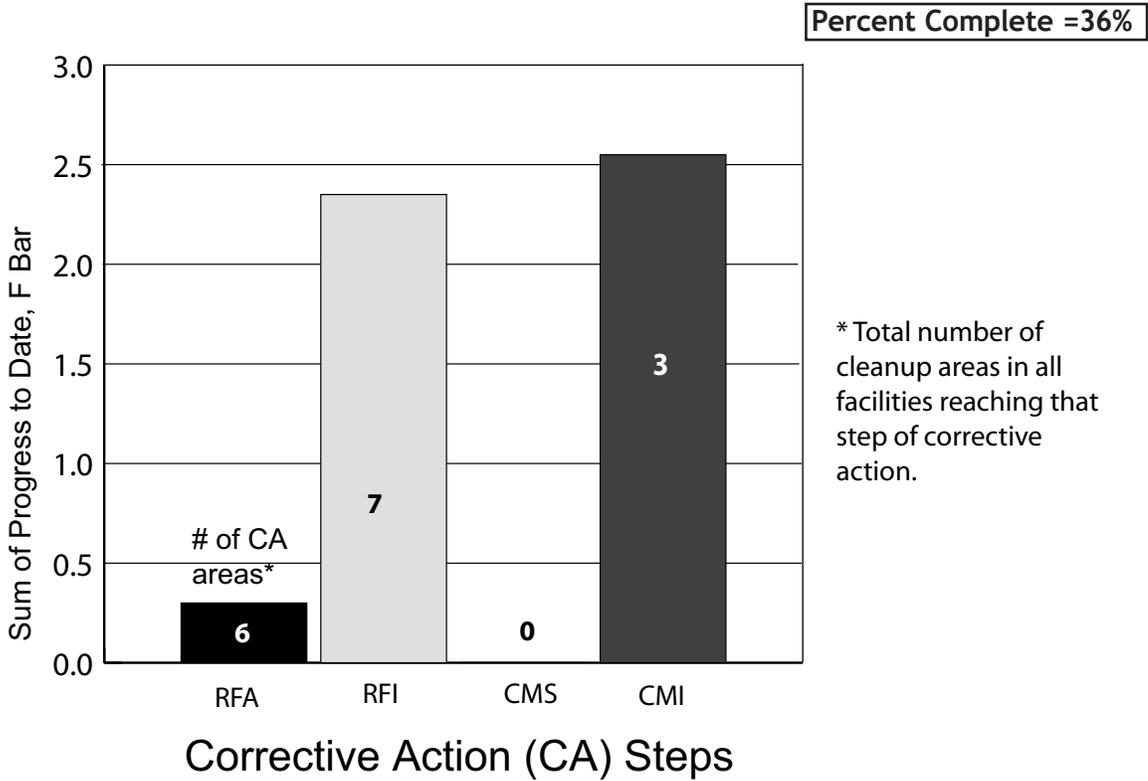


Chart 5 – Summary Graph of Performance Measure for State Medium Priority GPRA Sites (FY 00)

Medium Priority GPRA State Facilities (FY00)

	No. of Sites/Areas	F Bar
RCRA Facility Assessment (RFA)	6	0.45
RCRA Facility Investigation (RFI)	7	2.56
Corrective Measure Study (CMS)	0	0.00
Corrective Measure Implementation (CMI)	3	2.74
Total	16	5.75
Percent Complete	36 %	

Appendix C

Table 4– Individual Fractional Completion Values

Medium Priority GPRA State Facilities (FY 00)

Facility Name	Area	CA Code	Fractional completion value for the milestone
RFA (RCRA Facility Assessment)			
BOEING A&M SPACE CTR.	Facility	CA 050	1.00
BOEING AUBURN	Facility	CA 050	1.00
BOEING D & SG, Seattle	Facility	CA050	1.00
FUEL PROCESSORS INC	Facility	CA050	1.00
Bay Zinc	Facility	CA050	1.00
USARMY YAKIMA TRAINING CTR	Facility	CA050	0.00
RFI (RCRA Facility Investigation)			
BEI/Philip, Kent	Facility	CA 150	0.40
EMERALD SER., INC, Tacoma	Facility	CA 200	0.90
PET. RECLAIMING SERVICE	Facility	CA 150	0.40
UW Tac. CRAGLE PLUME	2	CA 200	0.70
UW Tac. BLECKERT PLUME	3	CA 200	0.70
UW Tac. Howe Plume	4	CA 200	0.70
UW Tac, Remaining	5	CA 200	0.70
CMS (Corrective Measures Study)			
CMI (Corrective Measures Implementation)			
BSB DIVERSIFIED CO INC		CA500	0.3
ROGERS SEED CO COLFAX		CA550	1.00
SAFETY KLEEN, AUBURN	Facility	CA550	0.90
OOS (OUT-OF-SYSTEM)			
AMERICAN PLATING		CA 210	NA
GEO PAC RESINS INC, TAC		CA 999	NA
VANCOUVER AERODROME		CA 999	NA

Figure 5 – Summary Graph of Performance Measure for State Medium Priority GPR Sites (FY 01)

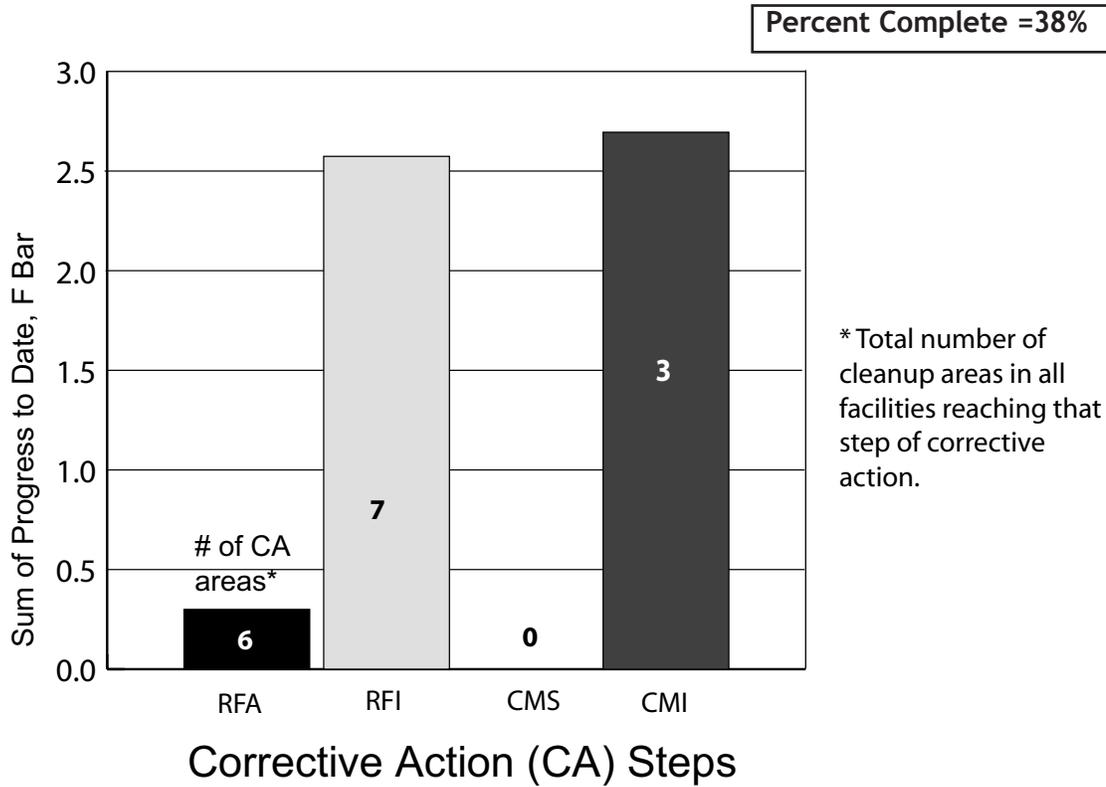


Chart 6 – Summary Graph of Performance Measure for State Medium Priority GPR Sites (FY 01)

Medium Priority GPR State Facilities (FY01)

	No. of Areas/Facil.	F Bar
RCRA Facility Assessment (RFA)	6	0.47
RCRA Facility Investigation (RFI)	7	2.72
Corrective Measure Study (CMS)	0	0.00
Corrective Measure Implementation (CMI)	3	2.81
Total	16	6.00
Percent Complete	38 %	

Appendix C

Table 5– Individual Fractional Completion Values

Medium Priority GPRA State Facilities (FY 01)

Facility Name	Area	CA Code	Fractional completion value for the milestone
RFA (RCRA Facility Assessment)			
BOEING A&M SPACE CTR.	Facility	CA 050	1.00
BOEING AUBURN	Facility	CA 050	1.00
BOEING D & SG, Seattle	Facility	CA050	1.00
FUEL PROCESSORS INC	Facility	CA050	1.00
Bay Zinc	Facility	CA050	1.00
USARMY YAKIMA TRAINING CTR	Facility	CA050	0.20
RFI (RCRA Facility Investigation)			
BEI/Philip, Kent	Facility	CA200	0.40
EMERALD SER., INC, Tacoma	Facility	CA 200	0.90
PET. RECLAIMING SERVICE	Facility	CA 150	0.40
UW Tac. CRAGLE PLUME	2	CA 200	0.80
UW Tac. BLECKERT PLUME	3	CA 200	0.80
UW Tac. Howe Plume	4	CA 200	0.80
UW Tac. Remaining	5	CA 200	0.80
WA UW TAC. BR CAMPUS	Facility	CA200	NA
CMS (Corrective Measures Study)			
CMI (Corrective Measures Implementation)			
BSB DIVERSIFIED CO INC		CA500	0.3
ROGERS SEED CO. COLFAX		CA550	1.00
SAFETY KLEEN, AUBURN	Facility	CA050	0.95
OOS (OUT-OF-SYSTEM)			
AMERICAN PLATING		CA 210	NA
GEO PAC RESINS INC, TAC		CA 999	NA
VANCOUVER AERODROME		CA 999	NA

Appendix D

Schedule for Completion of Final Cleanup

High Priority

Facilities/Areas:	30
Current completion:	52%
Proposed annual progress:	5%
Projected completion date:	2011

Medium Priority

Facilities/Areas:	16
Current completion:	38%
Proposed annual progress:	2.0%
Projected completion date:	2032

Explanation for Schedule of Cleanup

The projected completion dates were calculated from the progress made in the year 2000 to year 2001 for the high priority and medium priority sites.

For the high priority sites, one year produced a 5% increase in the percent completed. Since the current percent is 52%, approximately half way through the process, it is estimated that:

$$\frac{50\%}{5\%/yr} = 10 \text{ years to complete cleanup or the year 2011}$$

For medium priority sites, a 2% increase was observed, at a current percent completion of 38%.

$$\frac{(100-38)\%}{2\%/yr} = \frac{62}{2} = 31 \text{ years to complete or the year 2032.}$$